TRANSMITTAL OF APPEAL BRIEF

Docket No.
60680-1395

In re Application of: Colin C. Chen et al.

Application No.	Filing Date	Examiner	Group Art Unit
09/966,123-Conf. #4469	September 28, 2001	J. J. Rhee	1772

Invention: INSULATED HEAT SHIELD WITH WAVED EDGE

TO THE COMMISSIONER OF PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed: December 11, 2003 .

The fee for filing this Appeal Brief is 330.00 .

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Dated: March 2, 2004

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Appeal Brief Transmittal

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Dated: March 2, 2004 Signature: Kathryn L Nash (Kathryn L. Nash)

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Dated: 3/2/04 Signature: Kathryn L Nash (Kathryn L. Nash)

Docket No.: 60680-1395 (PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Colin C. Chen et al.

Application No.: 09/966,123 Confirmation No.: 4469

Filed: September 28, 2001 Art Unit: 1772

For: INSULATED HEAT SHIELD WITH WAVED EDGE Examiner: J. J. Rhee

APPELLANT'S BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Appeal is taken from the Examiner's Final Rejection mailed August 25, 2003 (hereinafter the "Final Office Action") of claims 1-12 in the above-identified application. The Notice of Appeal was timely filed on December 11, 2003. This brief is transmitted in triplicate.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

DANA CORPORATION

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-12 are pending in the application and are involved in this Appeal. The present application was filed on September 28, 2001 with originally-filed Claims 1-12. In response to the Office Action mailed March 10, 2003 (Paper No. 8), Claims 4 and 8 were amended (Paper No. 9). In response to a Final Office Action mailed August 25, 2003 (Paper No. 10) and the Advisory Action mailed November 14, 2003 (Paper No. 12), Appellants filed a Notice of Appeal on December 11, 2003 (Paper No. 13). No claims have been allowed.

Claims 1-12 were rejected in the Final Office Action under 35 U.S.C. §103(a) as being unpatentable over Moore, III et al. (U.S. Patent No. 5,590,524) ("Moore III") in view of Ragland et al. (U.S. Patent No. 5,958,603) ("Ragland").

IV. STATUS OF AMENDMENTS

Applicant filed an Amendment After Final Rejection on October 22, 2003. The Examiner responded to the Amendment After Final Rejection in an Advisory Action mailed November 14, 2003. In the Advisory Action, the Examiner indicated that Applicants' proposed amendments to claims 1-12 would not be entered.

Accordingly, the claims in Appendix A do not incorporate the amendments indicated in the paper filed by Applicant on October 22, 2003.

V. SUMMARY OF INVENTION

The invention relates in general to protective structures for vehicular engine parts, such as engine exhaust manifolds, that generate substantial heat and vibration during engine operation, and in particular to an insulated heat shield (Specification, Paragraph [0001]).

By way of background, exhaust manifolds of internal combustion engines can reach under-the-hood temperatures in the neighborhood of 1600 degrees F. Because such high temperatures may create a significant risk of damage to electronic components sharing space under the hood with manifolds, heat shields have been employed. Heat shields are designed to cover up and insulate exhaust manifolds and other heat generating components. Known heat shields include at least two

metal layers, with an insulation layer therebetween. The metal layers are traditionally formed from single layer blanks by forming dies (Specification, Paragraph [0002]).

The forming dies used to manufacture metal heat shields are prone however, to wrinkling at rounded edges of the metal layers where the layers are subjected to the higher stresses within the dies. Because these wrinkled edges are plastically deformed, they are subject to cracks. In addition, the wrinkled edges may also define thicker portions that are stiffer and more prone to produce undesirable echoes, rather than serving to absorb vibration and noise (Specification [0003]).

The present invention addresses the concerns that wrinkled edges cause, namely cracking and noise. More specifically, the present invention is directed to an improved heat shield that includes three layers; an outer metal layer, a center insulation layer, and an inner metal layer. The metal layers may include a system of integral beads to provide selective stiffness where desired (Specification [0006]). The edges of the metal layers are defined by outwardly flared undulations or waves to minimize the stiffness produced by plastic deformation that occurs during manufacturing of the heat shield (Specification [0005-6]). The waved edges may also be folded over to minimize the potential hazards caused by sharp metal edges to both installers of the heat shield and to other under-the-hood components. The folded over waved edges may also provide reinforcement of the composite heat shield structures (Specification [0006]).

VI. ISSUE

Are Claims 1-12 unpatentable under 35 U.S.C. §103(a) over Moore III et al. (U.S. Patent No. 5,590,524, hereinafter "Moore III") in view of Ragland et al. (U.S. Patent No. 5,958,603, hereinafter "Ragland")?

VII. GROUPING OF CLAIMS

The claims do not stand or fall together. For purposes of this appeal, Claim 1 stands or falls as Claim Group A. Claims 2-4 and 12 stand or fall as Claim Group B. Claims 5 and 11 stand or fall as Claim Group C. Claim 6 stands or falls as Claim Group D. Claims 7-10 stand or fall as Claim Group E. Reasons for separate patentability of the above-identified Claim Groups A-E are presented in the Arguments section pursuant to 37 C.F.R. §1.192(c) (5).

VIII. ARGUMENT

A *prima facie* case of obviousness requires, *inter alia*, that the applied references teach or suggest all of the claim limitations. *See* MPEP §2143; *In re Vacek*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1444 (Fed. Cir. 1991); *In re Royka*, 490 F.2d 981, 180 USPQ 560, 562 (CCPA 1972). Appellants respectfully traverse the 103(a) rejections because the references cited in the Final Office Action do not teach every element of the claims, and the rejections do not satisfy the standard set forth by the Federal Circuit in *In re Thrift*, 298 F.3d 1357; 63 USPQ2d 2002 (Fed. Cir. 2002), which prohibits the rejections of claims based on a "very general and broad conclusions" when "cited references do not support each limitation" in a claim.

A *prima facie* case of obviousness also requires that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. *See* MPEP §2143; *In re Linter*, 458 F.2d 1013, 173 USPQ 560, 562 (CCPA 1972). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Moreover, the fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

Appellants respectfully traverse the 103(a) rejections because there is no suggestion, motivation, or objective reason to combine the cited references. Further the cited references teach away form the combination of references relied on by the Examiner to reject the claims.

A. Claim Group A Was Improperly Rejected Because the Moore III and Ragland Combination Fails To Teach an Edge Portion with Outwardly Flared Undulations

Claim 1 (Claim Group A) was rejected under 35 U.S.C. §103(a) as being unpatentable over Moore III et al. in view of Ragland et al. Appellants respectfully submit that Claim Group A would not have been obvious to one of ordinary skill in the art because the cited references do not teach all of the claim limitations of Claim Group A. Moreover, the combination of the cited references would not have been obvious to one of ordinary skill in the art at the time of the invention because

the cited references teach away form Claim Group A. The references cited against Claim Group A cannot be said to include a suggestion or motivation for combination as asserted by the Examiner. Thus, the Examiner has failed to establish a *prima facie* case of obviousness against Claim Group A.

The Examiner rejected Claim 1, asserting that Moore III disclosed every limitation of claim 1 except the limitation that requires that at least one edge portion of the heat shield comprises outwardly flared undulations. Indeed, the Examiner expressly admitted that Moore III did not teach this feature:

> Moore III et al. fail (sic) to disclose wherein at least one edge portion of the heat shield comprises outwardly flared undulations (Paper No. 10, pg. 3). Moore, III et al. fail (sic) to disclose that the outwardly flared undulations define protuberances space (sic) apart along the one edge portion of the heat shield.

Instead, the Examiner relied upon Ragland as disclosing "outwardly flared undulations" on edge portions of the heat shield:

> Ragland et al. teaches at least one edge portion of the heat shield comprises outwardly flared undulations and that the outwardly flared undulations define protuberances space apart along the one edge portion of the heat shield (col. 10 lines 27-29) for the purpose of providing a strong multilayer interlocked wall which imparts surprising structural strength to the shield structure (col. 10 lines 30-32). (Paper No. 10, pg. 3).

Although Appellants agree with the Examiner that Moore III does not disclose at least one edge portion of the heat shield having outwardly flared undulations, Appellants strongly disagree with the assertion that the Moore III and Ragland combination teaches outwardly flared undulations on the edge portions of the heat shield in the context of the claimed invention.

Contrary to the Examiner's assertions, and as seen below in Figure 2, Ragland discloses a metal shield having a wall section 4 that includes five metal foil layers that are pleated together and folded on top of each other. The folds are then compressed on top of each other. *See col. 10, lines 27-29.* The compressed folds interlock at least some and preferably all of the metal foil layers together. *Id.* The interlocked wrinkles or folds are then curled to form a uniform edge roll 5. The

edge roll 5 further serves to interlock the metal foil layers and increase strength in the edge portion of the metal shield. *See col. 10, lines 32-36.*

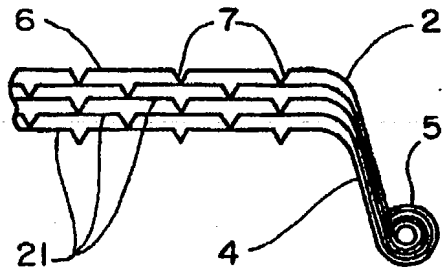

FIG_2

As described in the Background section of Appellant's application, compressing together the metal layers and folding them in the edge portions, such as is disclosed in Ragland, leads to increased stiffness of the heat shield. Stiffness in the edge portions of the heat shield results in increased noise caused by vibrations. Thus, Ragland teaches away from Appellant's invention, which expressly seeks to minimize stiffness in the edge portion:

> Also in the described embodiment, the edges of the metal layers are defined by outwardly flared undulations or waves to minimize stiffness produced by plastic deformation that occurs in the edges of the layer during manufacture of the shield. *Specification [0006].*
>
> ...an undulating, outwardly flared edge portion 18 is provided in the layers 12 and 16 to counteract an undesirable stiffness in the crushed metal edge imparted by the dies during manufacture of the shield 10. *Specification [0016].*

Indeed, Ragland shares some of the same prior art weaknesses that the Appellants' invention (as defined in Claim 1) was designed to overcome. More specifically, in the heat shield art, the forming dies that are used to manufacture metal heat shield layers create crushed together wrinkles at the rounded edges of the metal layers. These crushed together wrinkles are subject to cracking. Further, the crushed together wrinkles also define thicker portions in the heat shield body. These thickened portions are stiffer and prone to producing echoes, rather than absorbing vibrations and noise. *See, Specification [0003].* To solve the problems created by the use of traditional forming

dies, the Appellants have determined that the inclusion of outwardly flared undulations serve to minimize stiffness and to prevent cracks caused by crushed together wrinkles formed at rounded edges of the metal heat shield layers. *See, Specification [0006, 0016-17].* More specifically, the claimed undulations of Appellants' invention serve to distribute the flow of metal during the forming operation. By distributing the metal, as proposed by Appellants' invention, flexibility of the heat shield is accomplished, while minimizing cracking and undesirable noise issues. Thus, Ragland actually teaches away from Appellants' Claim Group A in that Ragland seeks to increase the stiffness in the edge portions rather than minimizing it as expressly stated by Appellants.

Moreover, Ragland clearly does not include outwardly flared undulations, but rather an edge roll surrounding the edge portion of the heat shield. The edge roll is shown as uniformly formed along the periphery of the metal shield without any waves or undulations. Thus, Ragland does not provide any mechanism for distributing the crushed and folded together metal in the edge portions to minimize thickness. Accordingly, Ragland fails to teach a key limitation of Appellants' invention, as defined by Claim 1.

It is respectfully submitted that the combination of Moore III and Ragland do not disclose all the claim limitations, namely at least the feature of outwardly flared undulations on at least one edge portion of the heat shield, as recited in Claim 1. Because the combination of Moore III and Ragland do not disclose all the claims limitations of Claim 1, the Examiner fails to establish a *prima facie* case of obviousness.

Even if the combination of Moore III and Ragland teaches all the claim limitations, it is respectfully submitted that there is no motivation for one of ordinary skill in the art to modify the heat shield of Moore III with the edge roll of Ragland to meet the claimed invention. For example, Ragland is directed to providing a metal shield that prevents "excessive tearing or ripping the metal foil layers" in at the rounded edges of the metal shield. *Col. 6, lines 16-30.* This is accomplished by compressing and folding the layers together to interlock them to impart unitary structural strength and stiffness. While accomplishing prevention of tearing or ripping of the metal foil layers, Ragland expressly states that the portions of the metal shield that comprises the compressed and folded layers "may have diminished thermal and acoustical insulation performance." *Col. 7,*

lines 45-60 (emphasis added). Diminished acoustical performance is precisely what Appellants were seeking to avoid.

Because there is no teaching or suggestion whatsoever in Moore III and Ragland of minimizing cracks and stiffness in the edges of the heat shield, there is no motivation for one of ordinary skill in the art to modify the heat shield of Moore III with the edge roll of Ragland, as suggested by the Examiner. This modification would only be obvious when viewed in light of the disclosure from the Appellants' patent application. The suggestion to combine the teachings of the prior art should come from the prior art, rather than from the applicant. *Orthopedic Equipment Co., Inc. v. United States*, 217 U.S.P.Q. 193,199 (C.A.F.C. 1983). "Monday morning quarterbacking is quite improper when resolving the question of obviousness." *Id.* The combination of the teachings of the prior art suggested by the Examiner is improper, absent a showing in the prior art that they can or should be combined. To do so would be an impermissible use of hindsight reconstruction from Appellant's disclosure. *In re Dembiczak*, 50 USPQ2d 1614 (Fed. Cir. 1999).

For at least this additional reason, the Examiner fails to establish a *prima facie* case of obviousness. In view of the foregoing, it is respectfully submitted that the Examiner failed to establish a *prima facie* case of obviousness for Claim Group A. For at least this reason, Claim 1 is allowable over the applied art, taken singly or in combination. Thus, the Examiner's rejection of Claim 1 under 35 U.S.C. §103(a) over the applied art should be reversed.

B. Claim Group B Was Improperly Rejected Because the Moore III and Ragland Combination Fails To Teach A Heat Shield Having a Circumferential Edge Boundary, Where the Boundary Is Folded Over to Encase Mating Edges of An Insulation Layer and Inner Metal Layer

Claims 2-4 and 12 (Claim Group B) were also rejected under 35 U.S.C. §103(a) as being unpatentable over Moore III et al. in view of Ragland et al. While claims 2-4 are in condition for allowance because they depend from allowable claim 1, these claims, and claim 12, are separately patentable because the cited references do not disclose all of the limitations of claims 2-4 and independent claim 12. More specifically, the cited references fail to teach or disclose a heat shield having a circumferential edge boundary, where the boundary is folded over to encase mating edges of an insulation layer and inner metal layer. Nor do the cited prior art references teach or disclose that a circumferential edge boundary of an outer metal layer of the heat shield is folded over the mating edges of the insulation layer and inner metal layer.

As stated in the Appellants' specification (referring to Figure 3 below), the entire boundary

edge 22 of the outer layer 12 is folded over so as to "fully encase the insulation layer 14 and the inner metal layer 16." *Specification, [0018].* The folded over portion serves to eliminate sharp edges by providing a boundary trim.

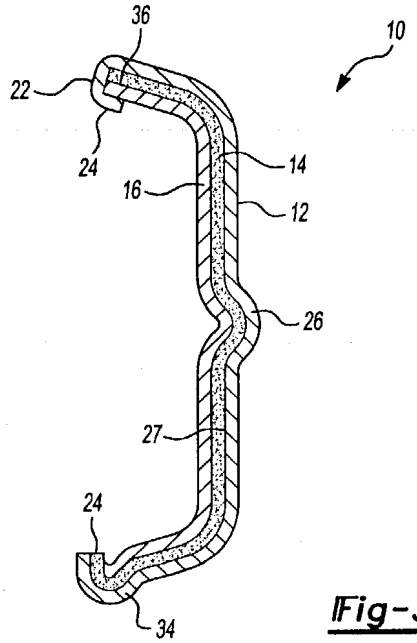

Fig-3

In the Final Office Action, the Examiner incorrectly asserts that Moore III teaches an outer metal layer of the heat shield having a circumferential edge boundary that is folded over and encasing mating edges of the insulation and inner metal layers:

> Moore, III et al. discloses that the outer metal layer of the heat shield comprises a circumferential edge boundary, wherein the boundary is folded over to encase mating edges of the insulation layer and the inner metal layer (figure 3 numbers 26, 13, 16). Moore, III et al. discloses that the circumferential edge boundary of the outer metal layer of the heat shield are folded over the mating edges to avoid sharp edges and to reinforce the heat shield structure under conditions of vibration and heat (figure 3, col. 3 line 59-60). (Paper 10, pg. 2).

However, the Examiner cannot point to any portion of text in any of the cited references that disclose "encasing" "mating edges" of the insulation layer and the inner metal layer. First, as clearly shown in Figure 3 from Moore III below, the insulation layer and the inner metal layer do not have "mating edges" as specifically claimed by Appellants. Instead, Moore III discloses that the inner layer 14 is bent back upon itself at 18 and extends to a free end 19. The interior aluminum layer 16 is formed with a reverse bend at 21 and extends to a free end 22. The free ends 19, 22 of

the inner metal layer 14 and interior aluminum layer 16, respectively, are offset a distance from one another such that the inner metal layer free end 19 is located inboard of the aluminum layer free end 22. *See col. 5, lines 2-10.* Indeed, Moore III expressly states that the free ends of the inner metal layer 14 and interior aluminum layer 16 do not mate together:

> It should be noted that the free ends 19, 22 and 24 are offset a small distance from each other due to the fact that the interior layer 16 and the outer layer 13 must extend around the reverse bend of the inner layer 14. *Col. 5, lines 6-10.*

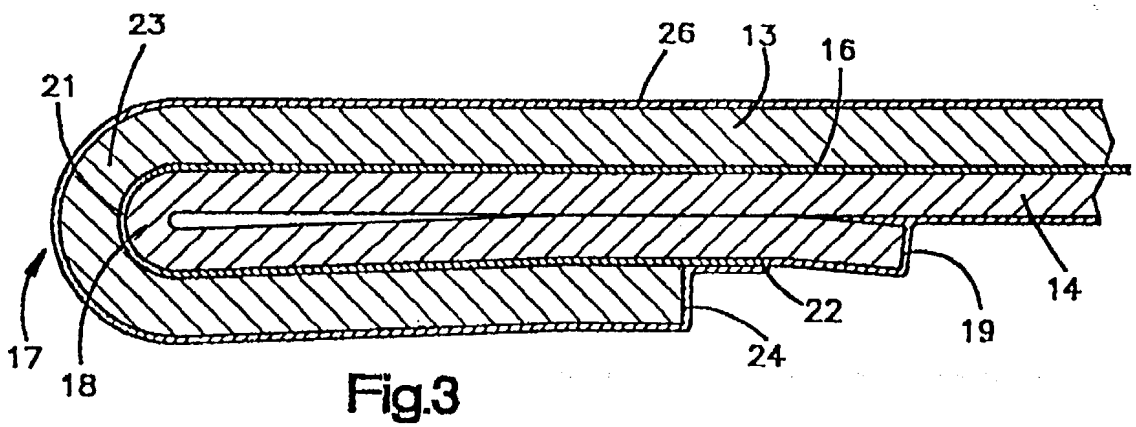

Fig.3

Second, Moore III also fails to disclose or teach a circumferential edge boundary that is folded over to "encase" mating edges of an insulation layer and inner metal layer. Nor does Moore III disclose or teach that the circumferential edge boundary of the outer metal layer "encases" the mating edges of the insulation layer and inner metal layer. Moore III instead merely discloses that the outer metal layer is folded over the interior aluminum layer and the inner metal layer in such a manner that the free end of the outer metal layer is offset from the interior aluminum layer and the inner metal layer. *Col. 5, lines 2-10.* As pointed out to the Examiner, the edges 19, 22 of both the inner layer 14 and the interior aluminum layer 16 extend past the boundary of the outer layer 13. *See, Paper No. 9, pg. 5.* Thus, Moore III does not teach "encasing" the mating edges of the inner metal layer and insulation layer as expressly claimed by Appellants. Accordingly, Moore III, taken individually or in combination with Ragland, does not disclose, teach or suggest all the claim limitations of Applicants' claimed invention as defined by Claim Group B as required under 35 U.S.C. §103(a). For at least this reason, claims 2-4 and 12 are allowable over the applied art, taken singularly or in combination. Thus, the Examiner's rejection of claims 2-4 and 12 under 35 U.S.C. §103(a) should be reversed.

C. Claim Group C Was Improperly Rejected Because the Moore III and Ragland Combination Fails To Teach or Disclose Outwardly Flared Undulations that Define Protuberances Spaced Apart Along an Edge Portion of the Heat Shield

Claims 5 and 11 (Claim Group C) were also rejected under 35 U.S.C. §103(a) as being unpatentable over Moore III et al. in view of Ragland et al. As discussed above with respect to Claim 1, the cited references fail to disclose a heat shield having "at least one edge portion" that comprises "outwardly flared undulations." Consequently, the cited references cannot reasonably be said to disclose "outwardly flared undulations that define protuberances spaced apart along one edge portion" of the heat shield.

Appellants' specification describes the edge portion 18 as being undulating such that a series of protrusions 20 that are spaced apart. As shown below, each protrusion 20 has a shape and disposition on the edge such that there is a ramp up and ramp down along the edge to give the edge a "fluted" appearance. This fluted appearance serves to control stiffness and noise issues from attenuating vibration. *Specification [0017].*

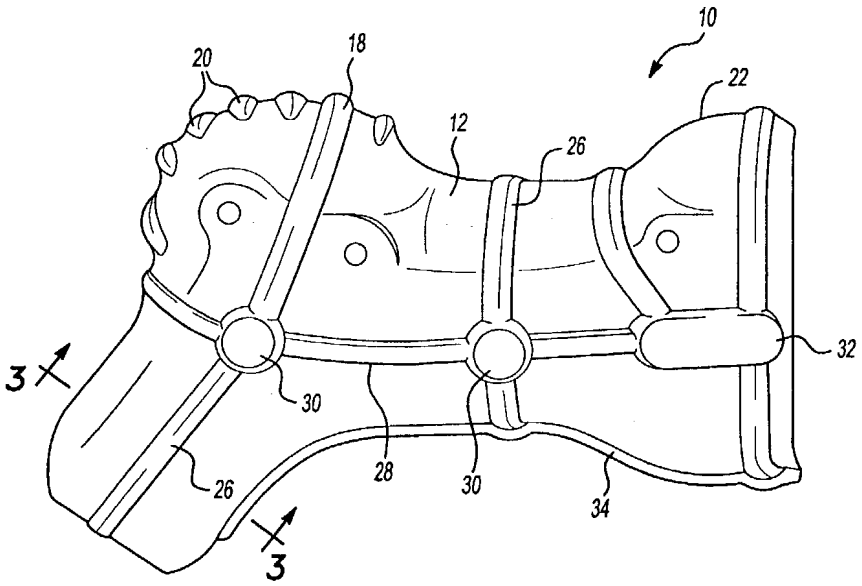

Fig-1

The Examiner admits that Moore III does not teach outwardly flared undulations that define protuberances spaced apart along one edge portion. *Paper 10, pg. 3.* However, contrary to the assertions of the Examiner, Ragland does not make up for the deficiencies of Moore III. As

discussed above, Ragland does not include outwardly flared undulations, but rather an edge roll surrounding the edge portion of the heat shield. As shown below, the edge roll is depicted as a uniform surface formed along the periphery of the metal shield without any waves, undulations, or protuberances.

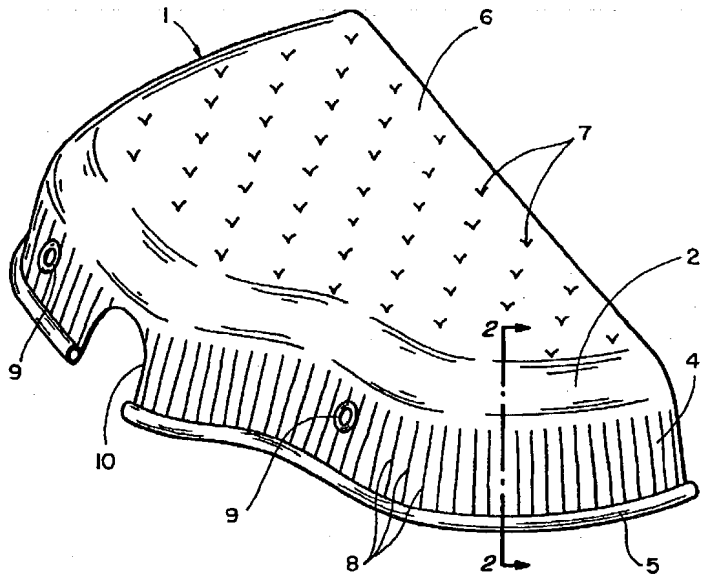

FIG_1

Accordingly, Ragland fails to teach a key limitation of Appellants' invention, as defined by Claim Group C. Reversal of the Examiner's rejection of Claims 5 and 11 is therefore respectfully requested.

D. Claim Group D Was Improperly Rejected Because the Moore III And Ragland Combination Fails To Teach Or Disclose A Series of Generally Orthogonally Disposed Beads Extending Over the Body Of The Heat Shield.

In the Final Office Action, claim 6 (Claim Group D) was also rejected as unpatentable under 35 U.S.C. §103(a) over Moore III and Ragland. While claim 6 is in condition for allowance because it depends from allowable claim 1, this claim is separately patentable because the cited references do not disclose all of the limitations of claim 6. Thus, Appellants respectfully submit that Claim Group D would not have been obvious to one of ordinary skill in the art. More specifically, Moore III, alone or in combination with Ragland, does not teach or disclose a series of generally orthogonally disposed beads extending over the body of the shield as asserted by the

Examiner. Thus, the Examiner has failed to establish a *prima facie* case of obviousness against Claim Group D.

As described in Appellants' application, and as shown in Figure 1 reproduced below, the body 10 of the heat shield includes beads 26, 28 that extend vertically and horizontally across it. The beads 26, 28 provide a degree of stiffness to assist in handling and installation of the heat shield, without compromising resonance and vibration control. *See, Specification [0019].*

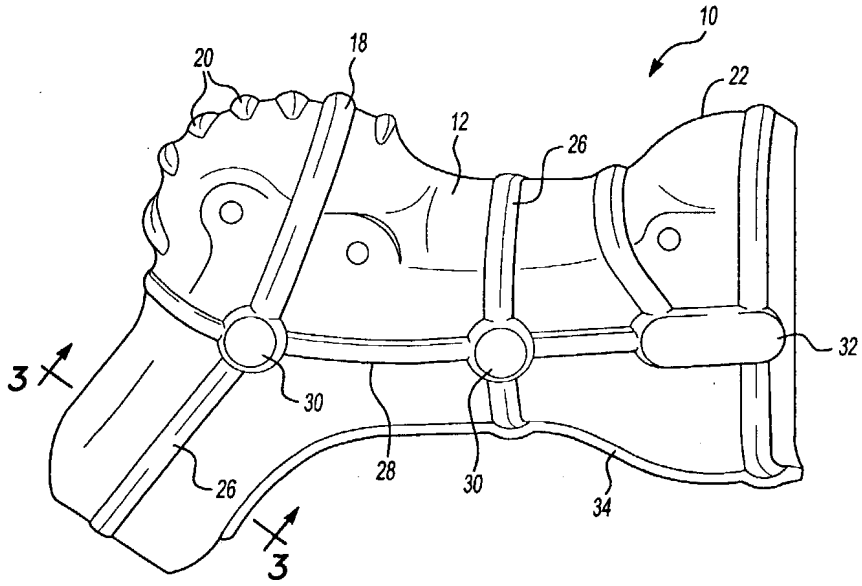

Fig-1

The Examiner incorrectly asserts that Moore III discloses:

> ...a series of generally orthogonally disposed beads extending over the body of the shield (figure 2 the bent portions at the bottom of the shield). *Paper No. 10, pg. 3.*

The Examiner appears to be asserting that the stepped portion positioned adjacent the bottom of the shield satisfies the claimed "generally orthogonally disposed beads." However, Moore III does not show any beads, nor is there any discussion of any beads or other reinforcements on the body surface of the shields. The stepped portion shown in Figure 2 merely serves to position the heat shield around the exhaust manifold while maintaining a spaced relationship between the

heat shield and the exhaust manifold. *See, Col. 3, lines 58-64.* Accordingly, as Moore III fails to disclose any beads, let alone a series of beads as claimed by Appellants, the Examiner failed to establish a *prima facie* case of obviousness.

Even assuming that the stepped portion could result in a bead, there are would be only a single bead, certainly not a "series of generally orthogonally disposed beads" as claimed by Appellants.

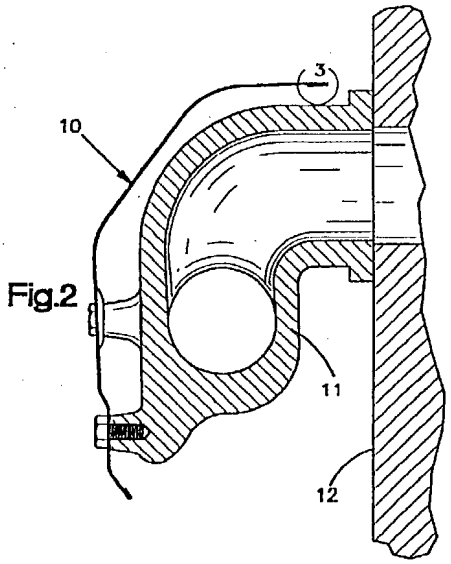

Fig.2

Accordingly, Moore III, alone or in combination with Ragland fails to teach or disclose all of the limitations of Claim Group D as required under 35 U.S.C. §103(a). For at least this reason, claim 6 is allowable over the applied art, taken singularly or in combination. Thus, the Examiner's rejection of claim 6 under 35 U.S.C. §103(a) should be reversed.

E. Claim Group E Was Improperly Rejected Because the Moore III And Ragland Combination Fails To Teach Or Disclose A Plurality Of Arcuate Nodes Positioned At the Intersections Of Each Orthogonally Disposed Beads.

In the Final Office Action, claims 7-10 (Claim Group E) were also rejected as unpatentable under 35 U.S.C. §103(a) over Moore III and Ragland. While claims 7-10 are in condition for allowance because they depend from allowable claim 6, these claims are separately patentable because the cited references do not disclose all of the limitations of Claim Group E. Thus, Appellants respectfully submit that Claim Group E would not have been obvious to one of ordinary

skill in the art. More specifically, Moore III, alone or in combination with Ragland, does not teach or disclose a plurality of arcuate nodes positioned at the intersections of each of the orthogonally disposed beads as asserted by the Examiner. Nor do the cited references teach or disclose that the nodes are "distributed over the body of said shield, each node having a circular shape." Thus, the Examiner has failed to establish a *prima facie* case of obviousness against Claim Group D.

As described in Appellants' application, and as shown in Figure 1 reproduced above in connection with the discussion regarding Claim Group D, a plurality of node bosses 30 are positioned at an intersecting junction of vertical and horizontal beads 26, 28. The bosses 30 serve to eliminate sharp corners that might otherwise give rise to potential cracks, or propagation of cracks. *Specification [0019].* In one embodiment, an oval or oblong boss 32 may be employed to accommodate a junction involving greater numbers of intersecting vertical and horizontal beads 26, 28.

As detailed above, the Examiner appears to assert that the stepped portion of the bottom of the heat shield represent the claimed "orthogonally disposed beads." In connection with Claim Group E, the Examiner also asserts that the screws disclosed in Moore III meet the "plurality of arcuate nodes positioned at the intersections of each of the orthogonally disposed beads" limitation. However, the Examiner's logic is flawed as the stepped portion is a) not a bead; and b) assuming it is a bead, the stepped portion will only result in a single bead. As such, the screws cannot satisfy the "arcuate nodes" limitation of Claim Group E because the single bead will not intersect with any other bead.

Accordingly, Moore III, alone or in combination with Ragland fails to teach or disclose all of the limitations of Claim Group E as required under 35 U.S.C. §103(a). For at least this reason, claim 6 is allowable over the applied art, taken singularly or in combination. Thus, the Examiner's rejection of claim 6 under 35 U.S.C. §103(a) should be reversed.

IX. CLAIMS INVOLVED IN THE APPEAL

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A do not include the amendments filed by Applicant on October 22, 2003.

X. CONCLUSION

Appellants respectfully submit that all of the appealed claims in this application are patentable for at least the reasons stated above and request that the Board of Patent Appeals and Interferences overrule the Examiner and direct allowance of the rejected claims. The Examiner has not provided sufficient evidence to support a rejection of Appellant's claims on the basis of obviousness. There are numerous claim elements that are not disclosed in any of the cited references. Moreover, the Examiner provides no support for the combination of the references.

This brief is submitted in triplicate. Please charge our Deposit Account No. 18-0013, under Order No. 60680-1395 from which the undersigned is authorized to draw for the fees identified in the accompanying transmittal.

Dated: 3/2/04

Respectfully submitted,

By _____

Michael B. Stewart
Registration No.: 36,018
Kristin L. Murphy
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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/966,123

1. (Original) A heat shield for an under-the-hood vehicular engine component comprising three layers: an outer metal layer, an insulation layer, and an inner metal layer adapted to be positioned directly proximal to a shielded component, said insulation layer positioned intermediately between said metal layers, said layers collectively providing thermal insulation of, and reduced noise transmission from, said component, wherein at least one edge portion of said heat shield comprises outwardly flared undulations.

2. (Original) The heat shield of claim 1, wherein said outer metal layer of said heat shield comprises a circumferential edge boundary, wherein said boundary is folded over to encase mating edges of said insulation layer and said inner metal layer.

3. (Original) The heat shield of claim 2, wherein said circumferential edge boundary of said outer metal layer of the heat shield are folded over said mating edges to avoid sharp edges and to reinforce said heat shield structure under conditions of vibration and heat.

4. (Previously Amended) The heat shield of claim 3 wherein said component comprises an exhaust manifold fixed to engine said exhaust manifold serving to carry hot engine gases away from said engine.

5. (Original) The heat shield of claims 3 wherein said outwardly flared undulations define protuberances spaced apart along said one edge portion of said heat shield.

6. (Original) The heat shield of claim 4 further comprising a series of generally orthogonally disposed beads extending over the body of said shield.

7. (Original) The heat shield of claim 6 further comprising a plurality of arcuate nodes positioned at the intersections of each of said orthogonally disposed beads.

8. (Previously Amended) The heat shield of claim 7 wherein said inner metal layer directly adjacent said shielded component serving to reflect heat back to the shielded component.

9. (Original) The heat shield of claim 8 wherein a plurality of said nodes is distributed over the body of said shield, each node having a circular shape.

10. (Original) The heat shield of claim 9 wherein said circumferential boundary edges of said outer metal layers of said heat shield are folded over said mating edges to avoid sharp edges to protect hands and fingers of an installer from contact with sharp edges.

11. (Original) A heat shield for an under-the-hood vehicular engine component comprising three layers: an outer metal layer, an insulation layer, and an inner metal layer adapted to be positioned directly proximal to the shielded component, said insulation layer positioned intermediately between said metal layers, said layers collectively providing thermal insulation of, and reduced noise transmission from, said component, and wherein at least one edge portion of said heat shield comprises outwardly flared undulations, and wherein said outwardly flared undulations define protuberances spaced apart along said one edge portion of said heat shield.

12. (Original) A heat shield for an under-the-hood vehicular engine component comprising three layers: an outer metal layer, an insulation layer, and an inner metal layer adapted to be positioned directly proximal to the shielded component, said insulation layer positioned intermediately between said metal layers, said layers collectively providing thermal insulation of, and reduced noise transmission from, said component, wherein said outer metal layer of said heat shield comprises a circumferential edge boundary, wherein said boundary is folded over to encase mating edges of said insulation layer and said inner metal layer to avoid sharp edges and to reinforce said heat shield structure under conditions of vibration and heat.